



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,905	09/28/2001	J.G. Walacavage	200-0664	4248

7590 10/30/2007  
Daniel H. Bliss  
Bliss McGlynn P.C.  
Suite 600  
2075 West Big Beaver Road  
Troy, MI 48084

EXAMINER
----------

PROCTOR, JASON SCOTT

ART UNIT	PAPER NUMBER
----------	--------------

2123

MAIL DATE	DELIVERY MODE
-----------	---------------

10/30/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

mn

<b>Office Action Summary</b>	Application No. 09/965,905	Applicant(s) WALACAVAGE ET AL.	
	Examiner Jason Proctor	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 August 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8, 10 and 12-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10 and 12-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2123

### **DETAILED ACTION**

Claims 1-8, 10, and 12-21 were rejected in the Office Action of 14 May 2007.

Applicants' submission on 16 August 2007 has amended claims 1, 12, and 21. Claims 1-8, 10, and 12-21 are pending in this application.

Claims 1-8, 10, and 12-21 are rejected.

#### ***Response to Arguments – 35 USC § 103***

1. In response to the rejection of claims 1-8, 10, and 12-21 under 35 U.S.C. § 103(a) as being unpatentable over “Emulation of a Material Delivery System” by Todd LeBaron and Kelly Thompson (LeBaron), Applicants argue that:

LeBaron et al. does not disclose playing a simulation model by a PLC logical verification system on a computer and viewing a flow of a part through the manufacturing line by a user, wherein the PLC logical verification system dynamically interacts through input and output with the simulation model to verify a PLC code of the manufacturing line, and generating the PLC code if a part flow represented in the simulation model is correct.

The Examiner has fully considered this argument and finds it persuasive. The present amendments to the independent claims require “viewing a flow of a part through the manufacturing line by a user” which is not disclosed or suggested by the references relied upon in the outstanding rejection. Accordingly, in response to the amended language, these rejections have been withdrawn.

An updated search of the prior art has revealed references that teach the currently claimed subject matter. New grounds of rejection have been entered below.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 10, 12, 20, and 21 are rejected under 35 U.S.C. § 102(b) as being anticipated by “Simulation, Animation, and Shop-Floor Control” by Cynthia Erickson et al.

Regarding claims 1, 12, and 21, Erickson discloses:

A method of part flow for a programmable logic controller logical verification system, said method comprising the steps of:

Constructing a simulation model of a manufacturing line using a computer [*“It is often desirable to link shop-floor hardware directly to a discrete-event simulation model or graphical animation.”* (page 649, abstract); *“Emulation has been used to describe graphical systems displaying the current status of the manufacturing shop floor.”* (page 649, Introduction); *“...a simulation model of the physical system must be developed.”* (page 650, Testing Control Logic)];

Playing the simulation model by a PLC logical verification system on the computer and viewing a flow of a part through the manufacturing line by a user [*“A second application of linking simulation and animation to shop-floor control is emulation. Rather than testing logic of individual PLC’s, emulation graphically depicts the current status of the manufacturing system. This status is updated in real time as the simulation language uses the shop-floor interfaces to detect changes in the system as processes are completed or new jobs arrive.”* (page 650, Manufacturing System Emulation)]

wherein the PLC logical verification system dynamically interacts through input and output with the simulation model to verify a PLC code of the manufacturing line [*"This type of emulation can be accomplished by directly interfacing the graphics to the logical control sequences of the shop floor controllers. A logical step is to combine this technology with state-of-the-art simulation capabilities, such that the data needs of a simulation run are derived from both the shop-floor devices being modeled and the underlying simulation (language) itself. This method requires an interface between a simulation language and factory-floor devices."* (page 649, Introduction)];

Determining if the part flow represented in the simulation model is correct to the user [*"Linking a simulation directly to a programmable logic controller (PLC) provides a means to test the control logic of the PLC... Once the control logic for the PLC has been written, it must be debugged and tested... To verify PLC logic using simulation, a model of the physical system must be developed; however, the timing of some events would be generated by the PLC."* (pages 649-650, Testing Control Logic, entire section)];

Generating the PLC code if the part flow represented in the simulation model is correct [*"Once the control logic for the PLC has been written, it must be debugged and tested..."* (page 650, Testing Control Logic)]; and

Using the generated PLC code and implementing the manufacturing line according to the part flow simulation model [*"A primary application involves testing the planned control logic for a specific manufacturing system."* (page 649, Abstract)].

Art Unit: 2123

Regarding claims 10 and 20, Erickson discloses modifying the part flow represented in the simulation model if the part flow represented in the simulation is not correct [*"Second, a simulation model of the physical system must be developed... It is then up to the simulation program to read this register value, and process this change as a possible event generation in the ongoing simulation."* (page 650, Testing Control Logic)].

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. § 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

Art Unit: 2123

invention was made in order for the examiner to consider the applicability of 35 U.S.C. § 103(c) and potential 35 U.S.C. § 102(e), (f) or (g) prior art under 35 U.S.C. § 103(a).

3. Claims 2-8 and 13-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Erickson in view of “Emulation of a Material Delivery System” by Todd LeBaron et al.

Regarding claims 2-8 and 13-19, Erickson teaches the limitations of the parent claims 1 and 12, respectively.

Regarding claims 2-5 and 13-16, LeBaron teaches selecting a part generator, generating a part with the part generator, and identifying part locations of the generated part within the manufacturing line [*“Emulation of the complex pick and pack conveyor system will be presented.”* (page 1055, left column, Abstract); *“All of the components for a particular order are assigned and routed to a specific pack station.”* (page 1055, right column, System Description); The analysis is conducted for a simulated 23-hour period (page 1060, left column, Analysis) which implicitly discloses the generation of components for a particular order so that the emulation can fulfill the order.].

Regarding “testing the generated part at the part location”, the specification teaches this limitation as determining if the part is present or not present (specification as amended, page 12, lines 9-11). LeBaron discloses emulation of a pick and pack conveyor system and therefore implicitly discloses “testing the generated part at the part location” as the ability to detect if the part is present or not present is a basic underlying principle in the proper operation of a pick and pack conveyor system. Further emphasis of this is LeBaron’s disclosure [*“The goal in developing algorithms was to process the required number of orders per day within the planned*

Art Unit: 2123

*facility schedule. Fully utilizing the pack stations is key in accomplishing this goal.*" (page 1057, right column, Problem Description)] that clearly implies that pack stations can determine whether a necessary generated part is present at that pack station.

Regarding claims 6-8 and 17-19, LeBaron teaches constructing records for the parts [orders] wherein the record has at least one resource and at least one capability [*"Historical data was used to generate daily order profiles (as in Table 1)."*] (page 1057, right column, Problem Description); Table 1 shows records [orders] for the parts, including a resource [Pick Station] and a capability [# Pick Types]].

Erickson and LeBaron are analogous art because both are drawn to emulation of factory equipment including PLC control software.

It would have been obvious to a person of ordinary skill in the art to combine the teachings of Erickson and LeBaron because Erickson explicitly describes the need to model the physical system [*"...a simulation model of the physical system must be developed."*] (Erickson, page 650, Testing Control Logic)] while LeBaron provides teachings related to forming a model of a material delivery system, as claimed. A person of ordinary skill in the art, attempting to apply the teachings of Erickson to an existing or planned material delivery system, would be motivated to use LeBaron's teachings to model that type of physical system. Doing so would reduce the trial and error involved in developing a model from scratch and benefit from the knowledge available in the prior art.

Therefore it would have been obvious to a person of ordinary skill in the art at the time of Applicants' invention to combine the teachings of Erickson and LeBaron to arrive at the invention specified in claims 2-8 and 13-19.



*Conclusion*

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Proctor whose telephone number is (571) 272-3713. The examiner can normally be reached on 8:30 am-4:30 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached at (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

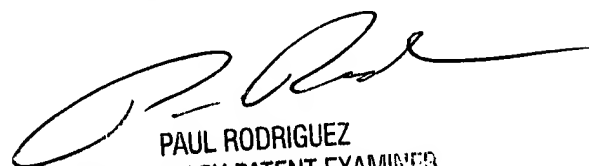
Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of

Art Unit: 2123

an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jason Proctor  
Examiner  
Art Unit 2123

jsp



PAUL RODRIGUEZ  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100